

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problems Mailbox.**

(12) UK Patent Application (19) GB (11) 2 192 321 (13) A

(43) Application published 13 Jan 1988

(21) Application No 8616637

(22) Date of filing 8 Jul 1986

(71) Applicant
Cheng Kun Chang,
No. 3 Alley 6 Lane 136, Mang Ping St., Panchaio City,
Taipei, Taiwan

(72) Inventor
Cheng Kun Chang

(74) Agent and/or Address for Service
Marks & Clerk, 57—60 Lincoln's Inn Fields, London
WC2A 3LS

(51) INT CL⁴
A01K 77/00

(52) Domestic classification (Edition J)
A1A 36

(56) Documents cited
GB 0678924
GB 0618659
WO A1 85/01859
US 3512291

(58) Field of search
A1A
A1M
Selected US specifications from IPC sub-classes A01K
A01M

(54) Fishing net

(57) A collapsible net has a frame comprising a plurality of pivotal rods 21 and coupled by connectors 321, 322 with a driving shaft (4) and transmission assemblies 31—33 located in a sleeve comprising inner and outer tubes 12, 11. The assembly 33 has a stud extending through a longitudinal slot in tube 12 into a spiral groove within tube 11 and is moved upwardly by rotating part 122 of tube 12 to eject the frame rods from the sleeve and expand the net.

Fig. 5.

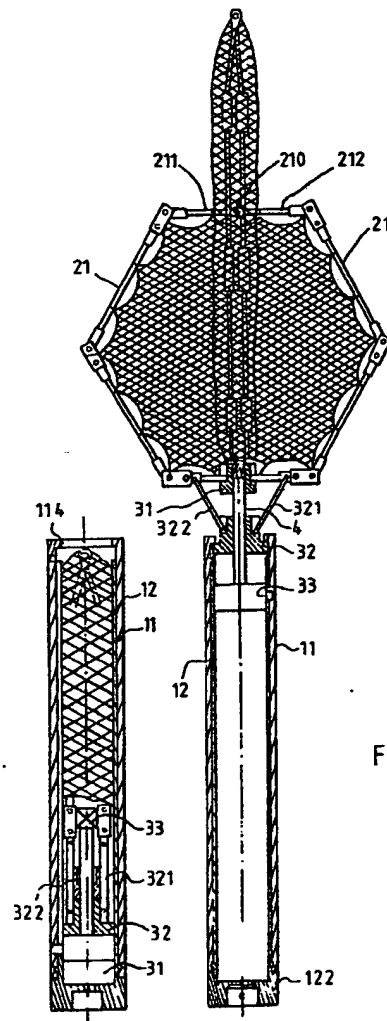
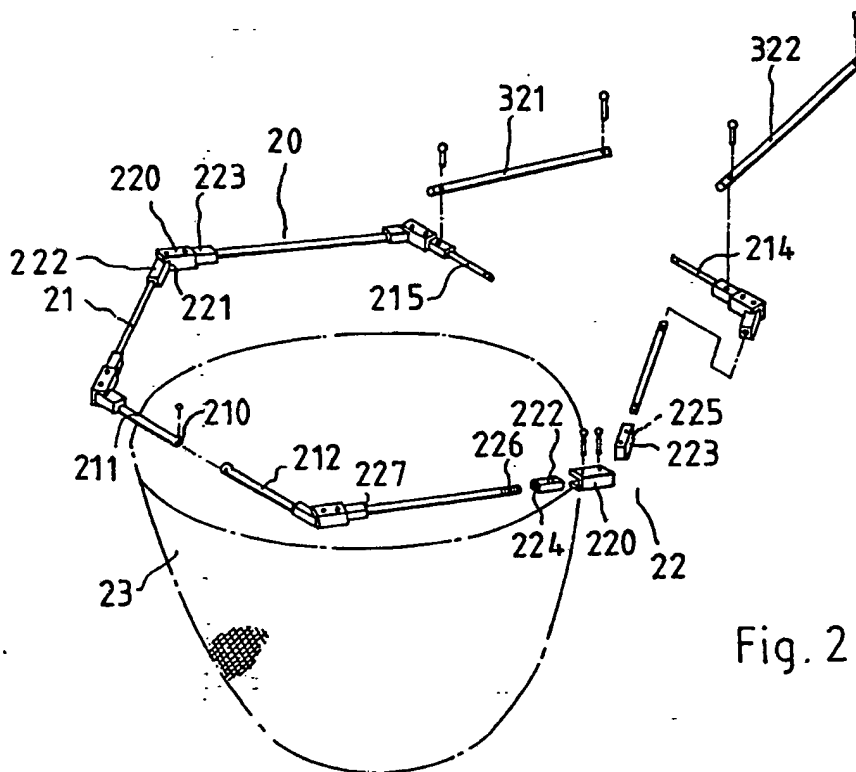
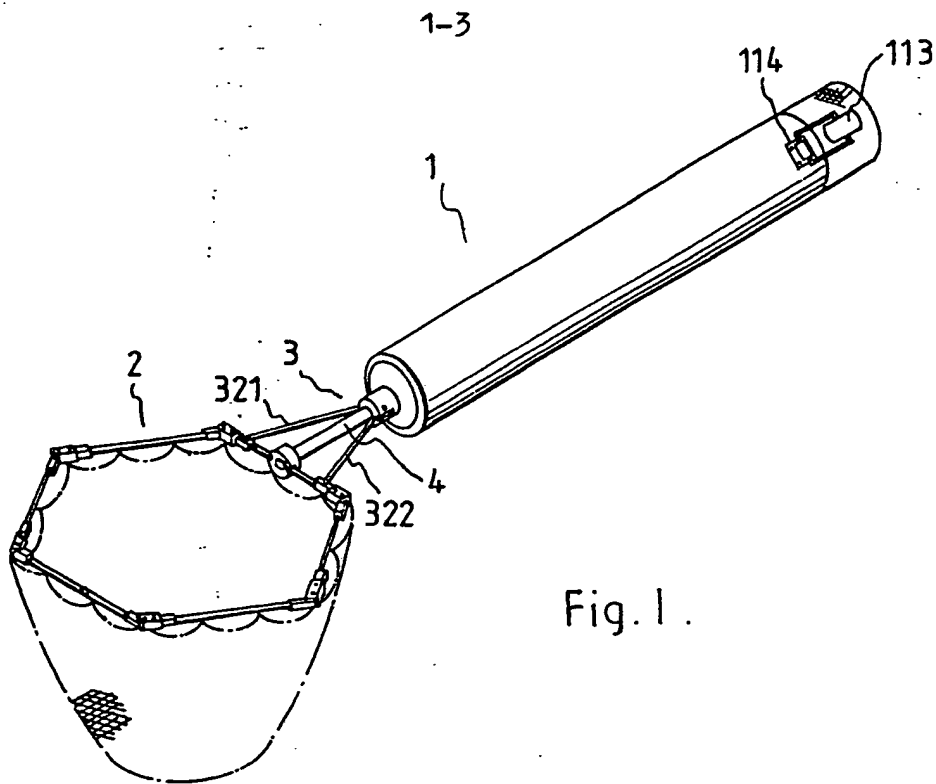


Fig. 6.



2-3

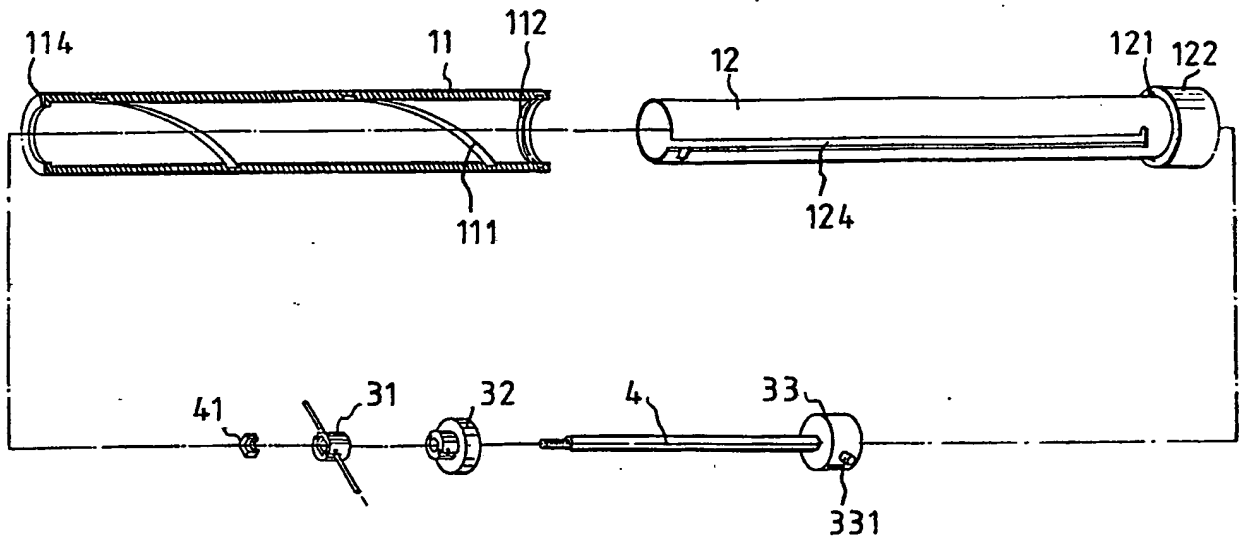


Fig. 3.

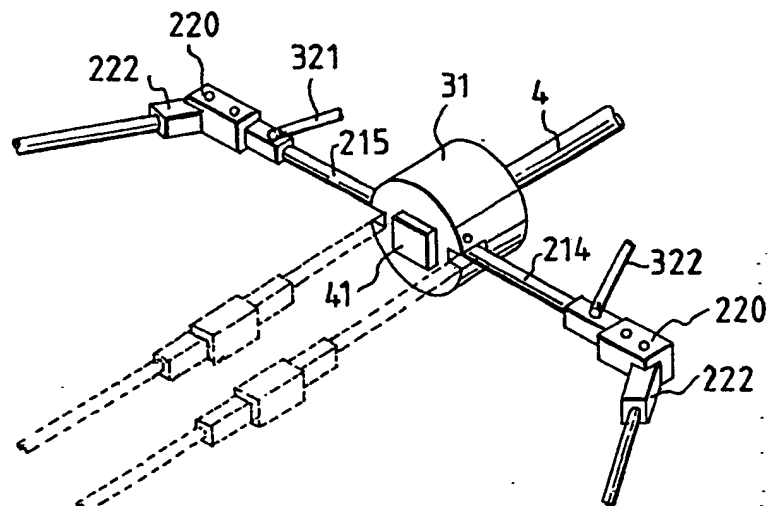


Fig. 4.

3-3

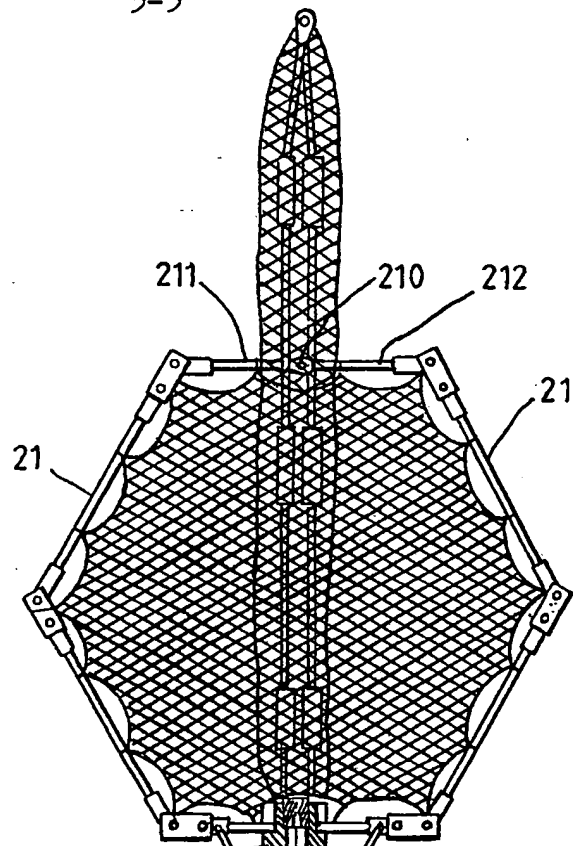


Fig. 5.

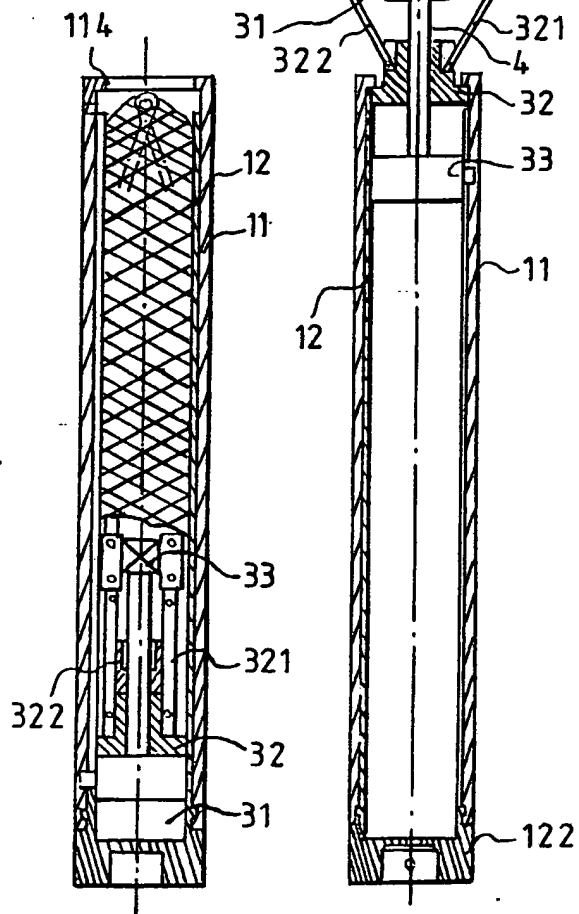


Fig. 6.

SPECIFICATION

An opening and recovering type net device

BACKGROUND OF THE INVENTION

5 1. Field of the Invention:

This invention is in connection with "Net Device." It particularly relates to a device which can recover the net frame in parallel, and then have the net wound around the frame and withdrawn into the

10 adjustable sleeve for the convenience of carrying.

2. Description of The Prior Art:

A kind of "String switch hand-drag Net" is made up of actuating string, guiding pipe, connection sheath, buffer spring, sliding sheath, sliding block and pressure spring etc. as the main essential parts in coordination with the ordinary hand-drag net and net frames for catch of fish. Among them, the sliding sheath and sliding block are the actuating components of the hand-drag net. The sliding sheath is mounted outside the guiding pipe between the two components. The sliding block is within the guiding pipe with a latch passing through L-shaped groove and connecting the two components to make L-shaped groove to the movement scope of the two components. Besides, when the latch disengages from groove lock, the sliding block receives the spring force released from the pressure spring to make it moving forward.

30 The two ends of the actuating string are connected to the sliding block to make the actuating string a closed curve. The tail portion of the actuating string is outside of the guiding pipe and circumvent to pass the belly of the net bottom. The actuating spring depends upon its own elastic force to make its tail in a slightly oval shape. According to the action of the sliding block, the actuating string causes the oval opening of its tail to become large or small so that the mouth of the net bottom to open large or to contract in shape to achieve the control purposes of this typical art.

In another typical art, a kind of fish net rod with an adjustable structure of length includes outer pipe, inner pipe, net for catching fish, plunger, round hoop, end sheath and handle etc. as the main components. Among them, there are:

The outer pipe is a round tube in proper length. Its one end is sheathed with a handle. At the proper position of another end, a concave ring shaped groove is installed to make its inner wall in the shape of a convex ring shaped flange. The inner pipe is a round pipe of proper length with a hollow core. The caliber of the pipe is lightly smaller than inner caliber of the outer pipe which is available for the insertion of one end of the concave ring groove, and at the entrance of that sheath, there is a concave opening. At the front end, a net for catching fish is connected. The fishing net is linked to the front end of the inner pipe. The plunger is a cylindrical rod.

60 Another end is installed in the concave ring shaped groove in eccentric shape. Between the concave ring shaped groove and the cylindrical end, there is a convex ring. At the proper position of the convex ring, there are two symmetrical and axial convex flanges.

The round hoop is an opening ring sheath. Its inner hole is an eccentric round hole. Its outer circumference has proper size concave and convex lines. One of the ends has radial differential faces.

70 The end sheath has a convex ring at the proper position of the front end of the inner wall of the end sheath. When it is inserted into the connection end of outer pipe, it can be put into its concave groove and fixed. At its outer pipe, it can be put into its concave groove and fixed. At its outer flanges, there are concave and convex lines so that it is easily hold for rotation.

The handle is inserted and connected to the tail end of the outer pipe.

80 In conclusion, the above components are assembled into the structure of the outer pipe in the net for catching fish. Its round cylindrical end of the plunger is inserted into the entrance end of the inner pipe, and at the proper position of the insertion entrance, two concave points are provided to make the projection of the inner wall and fit into the plunger in fixed manner. The round hoop is inserted into concave ring shaped groove of the plunger to make the section differential faces and the convex fringe of the plunger in corresponding and opposite manner.

In the other ordinary arts, it is a kind of improvement of fishing net. It is a net body to be threaded with steel wire, main rod, a fixed base with guiding pipe, a movable base installed with flapper, a brake base, brake base of a hook, spring and casing block etc. All of the above components make up the fishing net. Its features are: That spring is connected each other with casing block. It is placed in the guiding pipe while the two ends of the steel wire is inserted into the casing block, spring and the guiding pipe, and then it is united with the movable base which is placed on the main shaft, and the movable base is located between the fixed base and brake so that the steel wire can be driven to movement by the displacement of the movable base, and further the opening at the bottom of the net body will contract on account of that action. The net body drives the steel wire by the elastic action of the spring so that the opening at the bottom of the net body will expand outwards.

In a typical art, a kind of fishing net rack which is easily assembled and unloaded is made up of a net frame, assembled body, and convex square type iron sheet and handle. Its feature is: The convex rail at the connection point of net frame and block are respectively placed in the inner side of the guiding groove's catch and concave groove. Again, the square and concave type iron sheet and screws fix the net frame on the assembled body. Then, the shaft and screw shaft of the assembled body are screwed and installed, and the finishing net rack is thus formed.

125 Summary of the Invention:

This invention is to provide a kind of "Opening and Recovering type of Net Device." It is chiefly made up of the adjustable sleeve and the opening and recovering net frame etc. In the adjustable sleeve there installs a outer pipe and inner pipe. The

inner pipe has three transmission assemblies and one driving shaft. One of the transmission assemblies is installed with a stud which can pass through the long narrow groove of the inner pipe and embed in the spiral groove of inner wall of the outer pipe. By means of the turning of the head of the inner pipe to drive three transmission assemblies and driving shaft to move upward and downward. At the same time, the net frame follows the upward or downward movement of the transmission assemblies to open or close.

The main object of this invention is to install the frame rods with joints and first transmission assembly to form a net frame. And to fix the connecting rods with the lowest frame rods of the net frame and the second transmission assembly. By means of the joints, connecting rods, and transmission assembly to activate the net frame to be expanded as spreading form for usage or closed in parallel form for recovering into the adjustable sleeve for the convenience of carrying.

Another object is the adjustable sleeve. By means of the stud of the third transmission assembly passed through the long narrow groove of the inner pipe and, embedded in the spiral groove of inner wall of the outer pipe to drive the transmission assemblies and net frame upward or downward along the long narrow groove of the inner pipe and spiral groove of the outer pipe in the adjustable sleeve.

Another object of this invention is to install the three transmission assemblies respectively on the driving shaft. They are fixed or cased in different styles to make the driving shaft to be driven by the transmission assemblies and to activate the net frame to spread or close. At the same time, they will not slip out of the adjustable sleeve.

Brief Description of the Drawing:

Fig. 1 is a perspective view of this invention.

Fig. 2 is a disassembled view of the net frame according to invention.

Fig. 3 is a disassembled view of the adjustable sleeve assembly in this invention.

Fig. 4 illustrates the relationship among the transmission assembly, the driving shaft and the opening and recovering frame of the present invention.

Fig. 5 is a sectional view of the adjustable sleeve after the net frame being recovered into the sleeve.

Fig. 6 illustrates the opening and recovering positions of the invention.

Description of the Preferred:

From Fig. 1 we know that this invention comprises mainly an adjustable sleeve 1, an opening and recovering type net frame 2, a transmission assembly 3, a transmission shaft 4, etc. The net frame 2 is a multi-angle structure which consists of an even number of frame rods 21 to be connected by the joints 22. The lowest end frame rods is inserted and fixed into the first transmission assembly 31. The transmission assembly 3 and the shaft 4 are fixed or cased, and are put within the adjustable sleeve 1.

The net frame 2 is formed by the connection of the frame rod 21 with the joint 22. That joint has an opening 221 at one end of the main arm 220; there is a swing arm 222 at the opening 221 of which the angle is limited. At the other end of the main arm 220, there is mounted with a casting arm 223.

At the ends of both the swing arm 222 and casing arm 223, there are respectively tapped with inner threads 224 & 225. The whole frame 2 is formed by frame rod 21 with outside threads 226 & 227 on both ends; they are screwed and fixed in the above threads 224 & 225. The top frame rod 21 of net frame 2 is riveted by flat head short frame rod 211 & 212 each other. The lowest frame rod 21 of the net frame 2 is fixed properly by suitable short frame rod 214, 215 into the grooves at the opposite side of the first transmission assembly 31. The net 23 is hung on the frame rod 21, short frame rod 211, 212, 214, 215 (as shown on Fig. 2).

The adjustable sleeve 1 as shown in Fig. 3 is composed of outer pipe 11 and inner pipe 12. The outer pipe 11, on its inner wall, has spiral grooves 111. In its lower end, there is inner concave ring shape groove 112 so as to be fitted on the convex point 121 in the opposite position of the inner pipe 12. The upper part of the inner pipe 12 is inserted into the outer pipe 11 to form the lowest end of the inner pipe 12 as a rotation head 122. By rotating the rotation head 122 of the inner pipe 12, it turns within the outer pipe 11. At the lower end's proper position of the outer pipe 11 and inner pipe 12, there are locking devices 113 and 114 to fix the two adjustable sleeves without any rotation.

The transmission assembly 3 includes the first transmission assembly 31, the second transmission assembly 32 and the third transmission assembly 33. They are respectively encased or fixed on the driving shaft 4. The third transmission assembly is equipped with a stud 331. That stud 331 passes through the long narrow groove 124 of inner pipe 12 and then embedded in the inner wall spiral groove 111 of the outer pipe 11. By turning the rotation head 122 of the inner pipe 12, the third transmission assembly is driven along the spiral groove 111 of the outer pipe 11 and the long narrow groove 124 of the inner pipe 12 to rise or descend, and then it drives the first and second transmission assemblies 31, 32 and the driving shaft 4, to move together. The second transmission assembly 32 is encased to the middle position of the driving shaft (4) without being fixed. It has two cascades. In its central part, there is a hole for mounting the driving shaft 4. At the both sides of the smaller diameter part of the second transmission assembly, there are grooves. The connecting rods 321, 322 are connected with the grooves of second transmission assembly 32 and upward with the casing arm 223 of the short frame rod 214, 215 of the net frame 2. When the second transmission assembly 32 moves upward, the larger diameter part of it can be blocked by the locking device 114 of the outer pipe 11, to expose the smaller diameter part only, while the first transmission assembly 31 continue moving upward with the transmission assembly 33 and driving shaft 4 until the upward force is blocked by the

connecting rod 321, 322, and end of the long narrow groove 124 of the inner pipe 12, and then the net frame 2 is expanded as spreading shape for usage. When it closes, it can follow the descent movement of the first and second transmission assembly (31, 32), (20) to be withdrawn into the adjustable sleeve 1.

At the both opposite side of the first transmission assembly 31, there opens grooves for the insertion of the short frame rods 214, 215 of the net frame and then they are locked with sunk screws. The center part has an inner convex square groove so that they are fixed on the square head 41 of the driving shaft 4.

To open this invention all the user has to do is to turn the rotation head 122 at the lower end of inner pipe 12 of the adjustable sleeve 1, then the transmission assembly 3 and driving shaft 4 inside the adjustable sleeve 1 can rise simultaneously. At the same time, they drive the net frame 2 to open and expand so that it becomes an opened fishing net.

To recover the fishing net the user may turn the rotation head 122 of the inner pipe 12 to make the first transmission assembly 31 to follow the driving force of the third transmission assembly 33 to descend so that the net frame 2 to close up gradually. The connecting rod on the second transmission assembly 32 also gradually closes toward inside. When it reaches the specified extent of recovering, the second transmission assembly 32 will follow the movement of the first transmission assembly 31 to drop, then, roll up the net so that the whole transmission assembly the net frame and net are all recovered into the adjustable sleeve 1.

At the same time, this invention installs a wedge shaped insertion cylinder on the rotation head 122 if necessary. They are fixed with a pin to make the whole net to be fixed on the ground.

Therefore, the device of this invention has unexpected functions and effects in the commonly known arts.

CLAIMS

1. An opening and recovering type net device comprises mainly an adjustable sleeve, and opening and recovering type net frame, a transmission assembly, a driving shaft, and a net; The adjustable sleeve is composed of outer pipe and inner pipe; on the inner wall of the outer pipe there is spiral groove: in its lower end, there is inner concave ring shape groove so as to be fitted on the convex point in the opposite direction of the inner pipe. The inner pipe with a long narrow groove for the passing of the stud of the third transmission assembly and embedding in the spiral groove of the outer pipe;

the transmission assembly includes the first transmission assembly, the second transmission assembly and the third transmission assembly, they are respectively encased or fixed on the driving shaft; the second transmission assembly is formed into two cascades shape, at the both sides of the second transmission assembly, there are grooves for the fixation of connecting rod, the other end of the connecting rod is linked upward with the casing arm of the short frame rod of the net frame; at the both opposite sides of the first transmission assembly, there also opens groove for the insertion and fixation of the short frame rods of the net frame which is assembled by frame rods and joints; by means of turning the rotation head at the bottom of inner pipe of the adjustable sleeve, the three transmission assemblies and driving shaft can rise or descend simultaneously, at the same time, they drive the opening and recovering type net frame to expand for usage or to close for recovering into the adjustable sleeve for the convenience of carrying that constitutes one of the features.

2. An opening and recovering type net device as claimed in claim 1, wherein the opening and recovering type net frame is a multi-angle structure which consists of an even number of frame rods to be connected by the joints; the top frame rod of the net frame is riveted by flat head short frame rods each other; the lowest frame rod of the net frame is fixed by short frame rod into the grooves at the opposite side of the first transmission assembly to form an opening and recovering type net frame; the net is hung on the net frame; that constitutes another feature.

3. An opening and recovering type net device as claimed in claim 1, wherein the first transmission assembly has grooves on its both sides for insertion and fixation of short frame rods of the net frame; the center part has an inner convex square groove so that they are fixed on the square head of the driving shaft.

4. An opening and recovering type net device as claimed in claim 1, wherein the second transmission assembly in the middle of the driving shaft to be formed into two cascade shape, at the both sides of the smaller diameter part of the second transmission assembly there are grooves for fixation of the connecting rod which is linked upward with the casing arm of the short frame rod of the net frame; the second transmission assembly is encased to the middle position of the driving shaft without being fixed; when the second transmission assembly moves upward, the larger diameter part of it can be blocked by the locking device of the outer pipe so that it can not rise any more.